Amendments to the Claims

Please amend Claim 16. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Previously presented) A method of fabricating a heterojunction bipolar transistor comprising:

growing a base layer comprising gallium, indium, arsenic, and nitrogen over an n-doped GaAs collector from a gallium, indium, arsenic, and nitrogen source, wherein the base layer is p-doped with carbon from an external carbon source to thereby have a carbon-dopant concentration in a range of between about 1.5×10^{19} cm^{-3} to about 7.0×10^{19} cm^{-3}; and

growing an n-doped emitter layer over the base layer.

2. (Original) The method of Claim 1, wherein the external carbon source is carbon tetrabromide or carbon tetrachloride.

3. (Original) The method of Claim 2, wherein the gallium source is selected from trimethylgallium and triethylgallium.

4. (Original) The method of Claim 3, wherein the nitrogen source is ammonia or dimethylhydrazine.

5. (Original) The method of Claim 4, wherein the ratio of the arsenic source to the gallium source is about 2.0 to about 3.5.

6. (Original) The method of Claim 5, wherein the base is grown at a temperature of less than 750°C.

7. (Original) The method of Claim 6, wherein the base is grown at a temperature of about 500°C to about 600°C.

8. (Original) The method of Claim 6, wherein the base layer comprises a layer of the formula $Ga_{1-x}In_xAs_{1-y}N_y$, wherein x and y are each, independently, about 1.0×10^{-4} to about 2.0×10^{-1}.

9. (Original) The method of Claim 8, wherein x is about equal 3y.

10. (Previously presented) The method of Claim 8, wherein the collector is GaAs and the emitter is InGaP, AlInGaP, or AlGaAs and the transistor is a double heterojunction bipolar transistor.

11. (Original) The method of Claim 8, further comprising the step of growing an n-doped first transitional layer over the collector and disposed between the base and the collector, wherein the first transitional layer has a graded band gap or a band gap that is smaller than the band gap of the collector.

12. (Original) The method of Claim 11, wherein the first transitional layer is selected from the group consisting of GaAs, InGaAs, or InGaAsN.

13. (Previously presented) The method of Claim 12, further comprising the step of growing a second transitional layer over the base, wherein the second transitional layer has a first surface contiguous with a surface of the base and a second surface contiguous with a surface of the emitter, and wherein the second transitional layer has a doping concentration at least one order of magnitude less than the doping concentration of the emitter.

14. (Original) The method of Claim 13, wherein the second transitional layer is selected from the group consisting of GaAs, InGaAs, or InGaAsN.

15. (Original) The method of Claim 14, wherein the first transitional layer, the second transitional layer, or both the first and the second transitional layer have a doping spike.

16. (Currently amended) The method of Claim 14, further comprising the step of growing a ~~latticed~~ lattice matched layer over the collector, wherein the lattice matched layer has a first surface contiguous with a first surface of the collector and a second surface contiguous with a second surface of the first transitional layer.

17. (Original) The method of Claim 16, wherein the lattice matched layer is InGaP.